Each section is followed by "problems," some of which, it must be admitted, are absurdly "academic." Thus, to give the weight of a crucible as 26·59625 grams is what the Germans call "Decimalspielerei," and is apt to convey a perfectly illusory impression of the degree of accuracy attained in an ordinary weighing. The problems should be not so much arithmetical exercises as examples of the principles involved, and to this end it is unnecessary and unwise to inflict upon the student an unwieldy row of decimals which, especially in the hurry of written examinations, may land him into arithmetical blunders and so defeat what should be the real object of the examiner. It is also desirable that foreign proper names should be correctly spelled. The colleague of Dulong in the formulation of the law connecting atomic weight with specific heat is not usually styled Pettit (p. 141), nor, although there are variants in the name, is Ingen Houss (p. 183) commonly so written. Oxygen was discovered by Priestley on August 1, 1774, and not in 1775, as stated on p. 249 and elsewhere. As a matter of fact, Priestley had prepared it from nitre in 1771 without actually recognising it. Scheele, as is now known, was an independent discoverer, and had probably obtained the gas some time prior to 1774; but his first announcement of its existence was made in his treatise on Air and Fire, published in 1777.

Every conscientious teacher, properly equipped with knowledge and experience, and gifted with sympathy and enthusiasm, evolves his own methods of instruction sooner or later; but he can always learn from other teachers, even if at times it is only the negative gain of "how not to do it." From Mr. Lewis his gain will be positive. He will find his system rational and well-ordered, his methods of exposition clear and direct, and his experimental illustrations carefully chosen and strictly to the point.

A Jungle Book.

The Diary of a Sportsman-Naturalist in India. By E. P. Stebbing. Pp. xvi+298. (London: John Lane; New York: John Lane Co., 1920.) 21*s.* net.

A GREAT part of Mr. Stebbing's book is devoted to the sport and natural history of the big-game jungles of India, and no reader will escape their fascination. They are so primitive, so wild, so full of the unexpected, so tragic in their hidden vestiges of remote civilisation, and withal so rich in possibilities of present-day pleasure—to the sportsman-naturalist especially.

> "The log fire burning and crackling merrily outside, the subdued buzz of talk from the servants' lines, the whinnying of the picketed ponies or the shrill voices of the syces raised in execration when a biting or kicking match commences, the dull rumbling of the elephants engaged on their fodder, resembling distant thunder; the great columns of trees forming a background to the camp, on to which the camp-fires cast fitful shadows, whilst overhead the picture is closed in by the blue-black vault picked out with innumerable jewels and spangled with diamond dust. How pleasant it all is. . . ."

Mr. Stebbing tells of his first bull bison (*Bos gaurus*), his first sambhar stag, his first tiger, his first leopard, his first bear, his first boar, not to speak of creatures like pangolins and porcupines which the naturalist enjoyed and the sportsman spared. It is a sanguinary book, but it is very well written, and the tale is adorned with vivid thumbnail sketches by the author and with excellent photographs by Mrs. Stebbing, Mrs. E. M. Sparkes, and Sir John Prescott Hewett.

Mr. Stebbing's general impressions of the jungle are very interesting. One is the warning which the jungle folk pass on when danger is approaching. "This warning, though intended for the friends of the utterer, is understood by the whole community, even though among themselves they may be respectively the oppressor and oppressed." From the moment the tiger or leopard is descried,

> "every animal in the jungle is put at once on its guard by the performance of the birds and monkeys. The deer know perfectly well what it portends, and remain on the alert till their enemy has left the neighbourhood. In fact, it is quite common for a tiger or leopard, once he has been discovered in a jungle, to be fairly mobbed out of it; for he knows that once all the jungle animals have been informed of his presence he has a poor chance of getting even a plump young doe to make his meal off."

Another impression is the great difficulty experienced in "picking up" the animals—from elephant to partridge—in their natural surroundings.

> "Even a large animal like the tiger can move along in his surroundings in an almost invisible manner. His outline becomes merged in the general colour of the grass or scrub jungle, but there is nothing definite to pick up, and when he is motionless he is almost invisible, if not quite, to the untrained eye. . . . It is usually the eyes of the animal which are first perceived if it is facing the observer. . . . Whilst, therefore, in a new environment and with an untrained eye, the newcomer finds some difficulty in picking out any of the animals in his neighbourhood from their surroundings, the reverse is the case with the jungle

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folk. They will hear, smell, and see him seconds, even minutes, before he has any chance of getting on terms with them."

Some people have spoken of the silence of the Indian jungles; but this is true only of the hotter part of the day, when most of the mammals and birds are taking their siesta. In the morning and evening, and at night, the jungles are full of sound.

The interrelations of living creatures are perennially interesting, and Mr. Stebbing gives some fine examples. Thus certain caterpillars, which he names, defoliate great blocks of teak forest, leaving them exposed to the hot sun and hot winds so that the undergrowth becomes scorched and withered. The deer and some other mammals have to quit these shelterless tracts.

"The termite has its uses in the Indian forest, for it rapidly disposes of the vast amount of refuse branches and dead fallen stems which without its aid would accumulate on the forest floor and greatly add to the risk of fires and increase their intensity when they took place, in addition to making progression impossible for man or beast."

The red ants are a source of great trouble to man, though he does make a paste of them which is eaten as a condiment with curry!

"The red ant lives in the trees and builds nests of the leaves. Such nests are a common sight in the sál forests. The nests are constructed in an ingenious manner, the edges of the green leaves being gummed together. The mature ant does not possess any material with which to perform this work. His gum bottle he finds in the immature ant, which has glands secreting a sticky substance. Several of the adult ants hold the leaves together, whilst another seizes a youngster between its mandibles and uses him as the brush of the gum bottle. It shows either a high form of civilisation or a low form of sweating to thus make the children share in the labour of house-building."

The second part of this interesting book deals with the means to be taken to preserve the forest game animals from poachers and unsportsmanlike sportsmen, and this in turn leads to the larger question of the preservation of the Indian land fauna as a whole. Some of the finest game animals are now within measurable distance of extinction, and the creation of game sanctuaries has been commenced with the view of affording protection to certain animals, such as the bison, rhinoceros, and deer. Apart from game, many components of the fauna are of economic value, and zoologically all are interesting. Mr. Stebbing pleads convincingly for large permanent sanctuaries, from which sportsmen, collectors, exploiters, and the like would be barred. One almost feels as if Mr. Stebbing had seen St. Hubert's vision in the course of his book, for he becomes steadily less sanguinary and more of a naturalist. Nevertheless, it is very good reading through and through.

Elementary Pure Mathematics.

(1) *The School Geometry: Matriculation Edition.* By W. P. Workman and A. G. Cracknell. Pp. xi+348. (London: W. B. Clive, University Tutorial Press, Ltd., 1919.) 4*s.* 6*d.*

(2) *Modern Geometry: The Straight Line and Circle.* By C. V. Durell. Pp. x+145. (London: Macmillan and Co., Ltd., 1920.) 6*s.*

(3) *The Elements of Analytical Conics.* By Dr. C. Davison. Pp. vii+238. (Cambridge: At the University Press, 1919.) 10*s.* net.

(4) *An Algebra for Engineering Students.* By G. S. Eastwood and J. R. Fielden. (With answers.) Pp. vii+199+xv. (London: Edward Arnold, 1919.) 7*s.* 6*d.* net.

(5) *Elements of Vector Algebra.* By Dr. L. Silberstein. Pp. vii+42. (London: Longmans, Green, and Co., 1919.) 5*s.* net.

(6) *Graphical and Mechanical Computation.* By Dr. J. Lipka. Pp. ix+264. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1918.) 18*s.* 6*d.* net.

(1) THIS book is in reality sections i.–iv. of the authors' "Geometry: Theoretical and Practical," adapted to the requirements of students preparing for the matriculation and similar examinations. It combines the theoretical with the practical. After an introductory course of practical geometry based on intuition, there follows a series of propositions and theorems amounting, roughly, to "Euclid," Book I., Book III., Book II., and Book IV. The presentation and treatment call for no special comment; they are clear and concise, in the well-known style of the University Tutorial Series. There are many exercises of all kinds and of all grades of difficulty; many of the riders are provided with hints as to which theorems they are based on, and the student is thus led on to discover for himself the best methods for dealing with such exercises.

A few points deserve special mention. The definition of space on p. 34 is not likely to convey anything very clear or even intelligible to the average matriculation candidate. The theorem that the sum of the interior angles of a polygon of n sides is $(2n-4)$ right angles is unnecessarily restricted to convex polygons. Another figure is required on p. 85. Some misprints and one or

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